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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,772	09/06/2006	Etienne Chapelain	8952-000014/US/NP	4467

27572 7590 08/18/2009

HARNESS, DICKEY & PIERCE, P.L.C.
P.O. BOX 828
BLOOMFIELD HILLS, MI 48303

EXAMINER	
DIAZ, THOMAS C	
ART UNIT	PAPER NUMBER
3656	
MAIL DATE	DELIVERY MODE
08/18/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/591,772	CHAPELAIN ET AL.	
	Examiner	Art Unit	
	THOMAS DIAZ	3656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 May 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7, 9-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9* is/are allowed.

6)☒ Claim(s) *1-6,10,13-16 and 19-21* is/are rejected.

7)☒ Claim(s) *7,17 and 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 May 2009* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

This office action is in response to the reply filed on 05/14/2009. The examiner appreciates and acknowledges applicant's response.

Specification

The amendment filed 05/14/2009 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: Figure 10 in the drawings and the corresponding description of figure 10 in the specification. The specification very generically and broadly states that the anti-backlash gears could be mounted on the ring gear and be in the form of a ring gear. However, the original specification does not provide enough support for the drawing on figure 10 since for example, figure 10 includes a certain number of bolt holes on the washer and very explicit dimensions of the gear teeth and gear sizes of the backlash gearing which are not described.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, 10-14, 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laurent et al. (EP1199243A) in view of Damas (USP 4660432).

Regarding claims 1,

Laurent et al. discloses a steering wheel (fig.1, 9) having a first gear element (fig.3, 4; pinion gear) and a second gear element (fig.3, 14; ring gear) mounted on or mountable on a steering column (fig.3, 5), said first and second gear elements inter-engaging one another.

Laurent et al. fails to disclose the arrangement further including a first anti-backlash gear mounted directly on one of said gear elements, and a second anti-backlash gear mounted directly on said first anti-backlash gear, said first and second anti-backlash gears having teeth configured so as to align substantially with teeth of said one gear element, said first anti-backlash gear being rotatably biased relative to the said one gear element towards a position in which the said teeth of the said first anti-backlash gear are displaced from said corresponding teeth of the said one gear element, wherein said first and second anti-backlash gears are held in position by a retaining washer.

Damas teaches a first anti-backlash gear (fig.1, 6) mounted directly on one gear element (fig.1, 10), and a second anti-backlash gear (fig.1, 8) mounted directly on said first anti-backlash gear, said first and second anti-backlash gears having teeth configured so as to align substantially with teeth of said one gear element (fig.3 and fig.4 show how the teeth are substantially aligned. Note there is a point in time when they are exactly aligned), said first anti-backlash gear being rotatably biased relative to the said one gear element towards a position in which the said teeth of the said first anti-backlash gear are displaced from said corresponding teeth of the said one gear element (seen in figs.3 and 4; the backlash gear is biased with respect to the one gear), wherein said first and second anti-backlash gears are held in position by a retaining washer (fig.1, 9; washer that holds the gears in place). These anti-backlash gear being for the purpose of preventing backlash or rattling and prolonging the life of meshing gears (col.1, lines 15-19).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the pinion gear disclosed by Laurent et al. to include the anti-backlash gear assembly (fig.1, 8 and 6) and the retaining washer, as taught by Damas for the purpose of preventing backlash or rattling and prolonging the life of meshing gears (col.1, lines 15-21). The retaining washer would serve the predictable purpose of retaining the gearing in place.

Regarding claim 2,

Damas discloses two said anti-backlash gears are mounted on said gear element, the said first and second anti-backlash gears are biased in opposite directions (see fig.4; the gears are biased in opposing directions by spring element 13).

Regarding claims 3 and 20,

Laurent et al. in view of Damas discloses said gear element on which said first anti-backlash gear is mounted is a ring gear. (Since the backlash gearing is directly mounted on the pinion gear which engages the ring gear then it is considered to be mounted on the ring gear as well).

Regarding claims 4 and 21,

Laurent et al. in view of Damas discloses said gear element on which said first anti-backlash gear is mounted is a pinion gear.

Regarding claim 5,

Laurent et al. in view of Damas discloses said first and second anti-backlash gears each in the form of a plate (see fig.1 of Damas), each of said plates having an aperture therein (fig.1, 10), said aperture defining portions to engage spring elements (see fig.1, holes into which springs 13 fit), the said apertures of the said first and second anti-backlash gears being co-aligned (fig.1, apertures are co-aligned with apertures of gear 6) and receiving said spring elements (fig.1, 13).

Regarding claim 10,

Laurent et al. discloses a similar device comprising:

- a steering wheel (fig.1, 9) including a first gear (fig.3, 4; pinion gear);

- a steering column (fig.3, 5) including a second gear (fig.3, 14; ring gear) meshing with said first gear;

Laurent et al. fails to disclose

- a first anti-backlash gear directly mounted on one of said first gear and said second gear;
- a second anti-backlash gear directly mounted on said first anti-backlash gear; and
- a plurality of spring elements for joining said two anti-backlash gears to said one of said first gear and said second gear, wherein said first and second anti-backlash gears are rotatably biased relative to each other and to said one of said first gear and said second gear, wherein one of said first and second anti-backlash gears engages a first face of a tooth of the other of said first gear and said second gear, and the other of said first and second anti-backlash gears engages a second face of another tooth of said other of said first gear and said second gear.

Damas teaches the use of:

- a first anti-backlash (fig.1, 6) gear directly mounted on a first gear (fig.1, 10);
- a second anti-backlash (fig.1, 8) gear directly mounted on said first anti-backlash gear; and
- a plurality of spring elements (fig.1, 13 and 13') for joining said two anti-backlash gears to said gear (Since the claim does not recite any specific

structure of how the springs connect all the gears merely having seperate springs reads on the limitation), wherein said first and second anti-backlash gears are rotatably biased relative to each other and to said one of said first gear and said second gear (see fig.1,3 and 4; they are all rotatably biased relative to each other through springs 13 and 13'), wherein one of said first and second anti-backlash gears engages a first face of a tooth of the other of said first gear and said second gear, and the other of said first and second anti-backlash gears engages a second face of another tooth of said other of said first gear and said second gear. (see fig. 3 and 4; at some point during the operation of the gears, gear 6 would engage the flank of the right most tooth while gear 8 engages the other flank on the other tooth);

for the purpose of preventing backlash or rattling and prolonging the life of meshing gears (col.1, lines 15-19).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the pinion gear (the pinion gear being analogous to gear 10 in Damas) disclosed by Laurent et al. to include the anti-backlash gear arrangement (fig.1, 6 and 8), as taught by Damas for the purpose of preventing backlash or rattling and prolonging the life of meshing gears (col.1, lines 15-21).

Regarding claim 13,

Damas discloses said first and second anti-backlash gears are identically configured (see fig.1, they are of equal size).

Regarding claim 14,

Damas discloses said identically configured anti-backlash gears are inverted with respect to one another (see fig.1, they are on opposite sides of gear 10 and thus are inverted).

Regarding claim 19,

Laurent et al. fails to disclose a washer having a collar, said collar securing said washer to said one of first gear and said second gear;

Damas teaches the use of a washer (fig.1, 9 and 11) having a collar (fig.1, inner portion of washer 9 or 11 which engages the shaft), said collar securing said washer to a gear for the predictable result of retaining the gearing in place.

It would have been obvious to one of ordinary skill in the art at the time of the invention to make use of a washer having a collar, said collar securing said washer to said one of first gear and said second gear, as taught by Damas, for the predictable result of retaining the gearing in place.

Claims 6,15, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laurent et al. (EP1199243A) in view of Damas (USP 4660432) as applied to claims 4 and 10 above, and further in view of Berthelsen (USP 2206831).

Regarding claim 6, 15,

Laurent et al. in view of Damas disclose each of said spring elements passing through part of said aperture in one of said plates which engages said spring element, and part of said aperture in the said other plate which accommodates said spring

element (see fig.1 In Damas; each spring element passes through the defined apertures).

Laurent et al. in view of Damas fail to disclose said spring elements are of substantially "C" shape and formed from a sheet material.

Berthelsen teaches the use of substantially "C" shaped springs (fig.1, 64) formed from a sheet material and used in an anti-backlash gear arrangement for the purpose of biasing the gears with respect to each other.

It would have been obvious to one of ordinary skill in the art to substitute the springs taught by Berthelsen with the springs disclosed by Damas since they would provide the same solution of biasing the gears with respect to each other. As long as the springs generate a biasing force they'd solve the same problem.

Regarding claim 16, Damas discloses at least one of said plurality of spring elements extends through a first aperture in said one of said first and second anti-backlash gears and through a second aperture in said another other of said first and second anti-backlash gears (see fig.1, spring 13 extends through apertures in gears 6 and 8).

Allowable Subject Matter

Claim 9 is allowable over the prior art of record.

Claims 7, 17, 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed 05/14/2009 have been fully considered but they are not persuasive.

Applicant argues with respect to claims 1 and 10 that Damas fails to "teach or suggest a first anti-backlash gear directly mounted on a gear element and a second anti-backlash gear mounted directly on the first anti- backlash gear in combination with the other features of Claims 1 and 10." However, Damas does intend read on the claim as broadly recited. By changing the interpretation of the anti-backlash gears in Damas the claim stands rejected as presented above. Gears 6 and 8 can be construed to be anti-backlash gears mounted on gear 10. Determining which gear is directly connected to shaft 5 is irrelevant since all the gears either directly or indirectly drive the shaft upon which they rotate. Therefore, any of them can be construed to be anti-backlash gears. Furthermore, applicant doesn't define the "first and second gear elements" to be driven gear wheels directly connected to a shaft. In as much, the claim still is broad enough to lend itself to the above interpretation of the prior art.

Additionally, the rest of the limitations in claims 1 and 10 do not define the interrelationship of all the gears (for example, defining exactly how the springs connect all of the gears or the structure of the slots) enough to distinguish them over the prior art of record.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS DIAZ whose telephone number is (571)270-5461. The examiner can normally be reached on Monday-Friday 8:30am to 5:00pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571)272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thomas Diaz/
Examiner, Art Unit 3656

/Richard WL Ridley/

Supervisory Patent Examiner, Art Unit 3656